meap

Michigan Educational Assessment Program

Grade 5
Science

Released Items

Spring 2002

5 Potholes often appear in our roads and highways. What is one major cause of potholes?

A air pollution

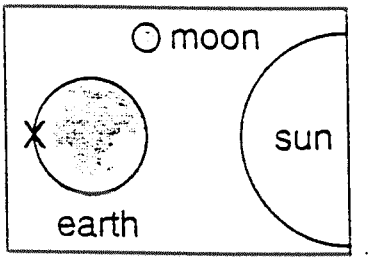
B wind erosion

C frozen water in the cracks

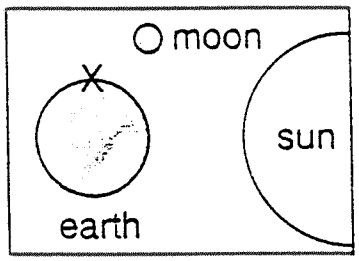
D sand wearing down the surface

6 Which position marked with an X in the diagram below **BEST** represents a location that is experiencing night?

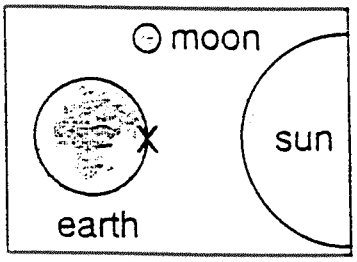
A



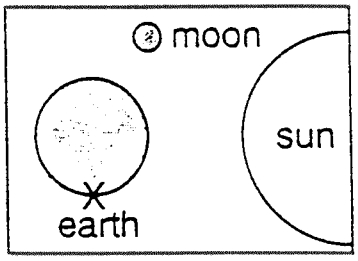
B



C



D



11 An animal with a backbone is

A a non-vertebrate.

B a vertebrate.

C a plant.

D an insect.

12 What is the **BEST** evidence scientists have concerning the existence of dinosaurs?

A fossilized bones of dinosaurs

B cave paintings of ancient dinosaurs

C stories passed own from generation to generation

D photographs of similar animals, like the Loch Ness Monster

14 A biologist studying birds made the following observations. She concluded that the birds would NOT compete for food.

Bird	Food	When They Feed	Where They Feed
Bird 1	insects	dawn, dusk	trees, middle
Bird 2	insects	dawn, dusk	trees, lower
Bird 3	insects	dawn, dusk	trees, upper

What evidence supports her conclusion?

A Insects are plentiful.

B The birds feed at different times.

C The birds lay eggs at different times.

D The birds feed in different parts of the trees.

23 Which of the following is the **BEST** way to investigate the effect of fertilizers on tomato plants?

A Put several plants outdoors and several indoors.

B Add fertilizer to several plants and change the amount of water given to each.

C Grow several plants under the same conditions, but change the amount of fertilizer added to each.

D Grow several plants under various temperature conditions, but keep the amount of fertilizer the same for each.

25 Which of the following characteristics is **LEAST** likely to be passed from a mother to her daughter?

A hair color

B eye color

C skin color

D favorite color

27 A TV commercial said that "Longlife" batteries last longer than any other kind. Does a "Longlife" battery really last longer than any other kind?

A Maybe. You could find out by doing an experiment with some "Longlife" batteries and several other kinds of batteries.

B Yes, because the commercial says it is so.

C No, because all batteries are made the same and really last the same amount of time.

D Maybe, but it would be impossible to prove.

Use the information below to answer questions 38 through 31.

Mary's class went on a field trip to a local apple orchard. The students learned about how apples grow, where they grow, and different ways that people use apples in cooking.

28 The tour guide at the orchard told the students that many of the apples are sold to make applesauce. The apples are peeled and then cooked. What form of energy is used to cook the apples?

A heat energy

B food energy

C light energy

B sound energy

Use the information below to answer questions 38 through 31.

Mary's class went on a field trip to a local apple orchard. The students learned about how apples grow, where they grow, and different ways that people use apples in cooking.

29 When an apple seed is planted, an apple tree grows. Identify stages of growth to produce fruit.

A seed ⇨ flower ⇨ fruit ⇨ plant

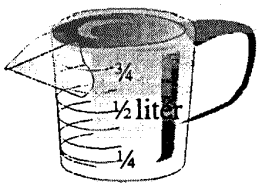
B plant ⇨ flower ⇨ seed ⇨ fruit

C seed ⇨ plant ⇨ flower ⇨ fruit

D flower ⇨ plant ⇨ fruit ⇨ seed

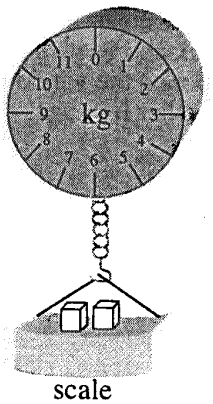
30 Mary has $2.00. Apples cost $1.30 per kilogram (kg). Which device does Mary need to find out how many apples she can buy?

A



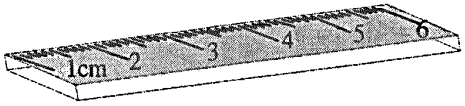
measuring cup

B



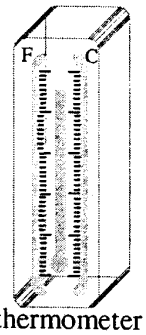
scale

C



ruler

D



thermometer

31 3 points

Mary likes sweet apples. She decides to compare different types of apples to see which one is the best buy. She buys three different apples. She measures the size of each apple, records the price, and then tastes each one. She records her data in the following table:

Apple Type	Apple Color	Taste	Price Per Apple	Average Size in Centimeters
Golden	Yellow	Sweet	$0.35	6 cm
Granny Smith	Green	Tart	$0.25	8 cm
Macintosh	Red	Sweet	$0.30	7 cm

Mary decides that the Macintosh apples are the best apple for her to buy the next time.

Identify **three** pieces of evidence from the chart that support Mary's decision.

ANSWER THIS ITEM IN YOUR ANSWER BOOKLET.
NOTHING WRITTEN IN THIS TEST BOOKLET WILL BE SCORED.

MEAP Grade 5 Science 2002
Item #31 Rubric

Acceptable Response

- She chose the biggest, cheapest, sweet apple.
- Sweet, 0.30, 7cm

Note: It is not enough to simply restate the headings from the chart (taste, price, size).

Scoring Guide

3 points = the student identifies the 3 correct pieces of evidence
2 points = the student identifies only 2 of the correct pieces of evidence
1 point = the student identifies only 1 of the correct pieces of evidence
0 points = the student fails to identify any correct pieces of evidence

37 Which of the following increases friction?

A wax on floors

B wheels on skates

C rainwater on a road

D rubber soles on shoes

38 When Roberto and his dog Perro walk to the corner, their shadows are behind them. Where will the shadows be located when Roberto and his dog immediately turn around and walk back?

A There will be no shadows.

B The shadows will be behind them.

C The shadows will be beside them.

D The shadows will be in front of them.

Michigan Educational Assessment Program
Statewide Test Item Analysis
Science Grade 5
Winter 2002

District: MICHIGAN DEPARTMENT OF TREASURY
School: STATEWIDE SCHOOL DATA
Codes: District- 99999 School- 0001
Run Date: 07/26/2002

Multiple Choice

Item No.	Benchmark Code	Percent Answering by Response A	B	C	D	Omit/ Mult
Constructing						
02	1ES6	14	74*	5	7	0¤
04	1ES1	12	5	11	72*	0¤
20	1ES5	86*	6	6	1	0¤
21	1ES5	20	64*	13	3	0¤
22	1ES5	82*	2	9	6	0¤
23	1ES2	6	15	53*	26	0¤
30	1ES4	2	96*	2	1	0¤
32	1ES6	7	84*	4	4	0¤
33	1ES2	89*	2	3	5	1
34	1ES2	6	5	84*	5	1
43	1ES2	16	54*	17	12	1
Reflecting						
12	1ES1	93*	2	2	3	0¤
14	1ES1	10	10	5	75*	0¤
27	1ES1	77*	2	12	8	0¤
Life Science						
11	2ES1	12	85*	1	2	0¤
13	4ES2	1	3	94*	2	0¤
15	5ES2	1	1	97*	1	0¤
16	4ES2	5	83*	9	3	0¤
17	5ES1	87*	9	2	1	0¤
18	2ES2	71*	8	6	15	0¤
25	3ES1	9	9	12	70*	0¤
29	2ES3	6	2	90*	1	0¤
Physical Science						
26	1ES1	5	4	13	78*	0¤
28	1ES3	87*	8	4	1	0¤
36	1ES3	3	81*	12	3	1
37	3ES2	19	19	12	49*	1
38	1ES2	7	10	69*	12	1
39	4ES4	3	19	14	63*	1
40	3ES2	4	57*	19	19	1
41	4ES4	8	6	4	81*	1
42	3ES5	6	6	2	85*	1
Earth Science						
01	1ES2	5	3	2	90*	0¤
03	4ES1	11	20	59*	10	0¤
05	1ES4	12	15	54*	19	0¤
06	4ES2	53*	33	10	4	0¤
07	3ES2	3	15	29	53*	0¤
08	3ES1	2	85*	4	9	0¤
09	3ES1	1	2	94*	2	0¤
24	2ES3	90*	4	2	3	0¤

Number of Students Included: 129272

Constructed Response

Item No.	Benchmark Code	Percent Receiving Number of Points 0.0	0.5	1.0	1.5	2.0	2.5	3.0	Percent Receiving Condition Codes A	B	C	D
Reflecting												
19	1ES4	7	2	25	9	26	12	16	2	0	0	1
31	1ES1	13	3	19	3	21	4	35	1	0	0	1
35	1ES1	8	2	56	8	13	2	10	0	0	0	1
Earth Science												
10	2ES1	14	1	12	2	22	3	45	0	0	0	1

Condition Codes for the Constructed Response Items:

- A Off-task
- B Illegible
- C Written in language other than English
- D Blank/refused to respond

Using the Benchmark Codes

You can link the individual items to their corresponding benchmark in the *Michigan Curriculum Framework*, approved in 2000.

Each benchmark code contains four characters. The first character, an Arabic numeral, identifies the content standard under the specific strand. The next two characters represent the grade level column designation in the content standards documents (ES = Elementary School, MS = Middle School, and HS = High School). The number following these letters represents the specific benchmark in the column designated by the grade level.

EXAMPLE
An item with benchmark code 1MS2 under Using Scientific Knowledge in Life Science is referring to context standard 1, Cells. Within that content standard, you need to look at middle school benchmark number 2, "explain why specialized cells are needed by plants and animals," to find the match.

CAUTION
Making inferences about students based on their answers to individual items is inadvisable due to the low reliability of single item measures. These data should only be used to make inferences about the performance of groups that are classroom size or larger.

Omit/Mult = Omits and Multiple Responses
¤ Number of students present rounds to zero